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FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEY and WATER SUPPLY FORECASTS for MONTANA & NORTHERN WYOMING

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE, and MONTANA AGRICULTURAL EXPERIMENT STATION

In cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, U.S. Bureau of Reclamation, State Engineers of Montana and Wyoming and other Federal, State and private organizations.

FEB. 1, 1958

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1300 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS RIVER BASINS	ISSUED	COOPERATING WITH	LOCATION
	MONTHLY (FEB, -MAY),	COLO. EXP. STATION	FT. COLLINS, Colo.
COLUMBIA Includes Alaska	MONTHLY (JANMAY)		BOISE, IDAHO
UPPER MISSOURI	MONTHLY (FEBMAY)	Mont.Agr.Exp.Station	
WEST-WI 0E	SEMI-ANNUALLY (OCT. 1 AND APR.1)		PORTLAND, OREGON
STATES			
A R I Z O N A		SALT R. VALLEY WATER	PHOENIX, ARIZONA
NE VADA	MONTHLY (FEB APR.)	NEVAOA STATE ENGINEER	RENO. NEVAGA
ORE GON	MONTHLY (JANMAY)	ORE.AGR.EXP.STATION	PORTLANO, OREGON
UTAH	MONTHLY (JANMAY)	UTAH STATE ENGINEERUTAH AGR.EXP.STATION	SALT LAKE CITY, UTAH
Washington	Monthly (FEB May)	WASH. STATE DEPT. OF	SPOKANE, WASHINGTON
WYOMING	Monthly (FEB June)		CASPER, WYOMING
Copies of the	e various reports may be	secured from: Head, Water Supp	oly Forecasting Section

Soil Conservation Service 209 S.W. 5th Avenue, Portland 4, Oregon

PUBLISHED BY OTHER AGENCIES

OTHER SNOW SURVEY REPORTS	
BRITISH COLUMBIA MONTHLY	(FEBJUNE)
CALIFORNIAMONTHLY	(FEBMAY)

FEDERAL - STATE COOPERATIVE

SNOW SURVEYS and WATER SUPPLY FORECASTS

for

MONTANA AND NORTHERN WYOMING

(Upper Missouri and Upper Columbia River Basins)

Report Prepared by:

A. R. Codd Hydraulic Engineer Soil Conservation Service

Soil Conservation Service
U. S. Department of Agriculture
and
Montana Agricultural Experiment Station
Bozeman, Montana

Report issued by:

H. D. Hurd State Conservationist of Montana

O. W. Monson
Irrigation Engineer
Montana Agricultural
Experiment Station

M. M. Kelso, Director Montana Agricultural Experiment Station



WATER SUPPLY OUTLOOK as of FEBRUARY 1, 1958

Snow Survey data for February first show a slight * * deficiency from average at this early date in the sea-* son. The snow-pack on the Missouri Basin averages 76 * per cent of last season, 57 per cent of 1956, and 78 * per cent average. The Columbia Basin snow-pack aver-* age is 103 per cent of last year, 74 per cent of 1956, * and 94 per cent average. 4% Missouri River Reservoir Storage is close to aver-* age on February first. In the Columbia Basin, reser-* voir storage is slightly above average with the excep-* tion of the Mission Valley, which is about 50 per cent * of the February first volume. *

MISSOURI BASIN

JEFFERSON RIVER:

Snow cover on the Jefferson River basin appears to be about 95 per cent average and only 87 per cent of last year's pack. On March first, when more data are available, a better estimate can be made.

MADISON RIVER:

The February first measurement on seven snow survey courses indicates a 75 per cent pack over the basin for 1958. Snow data give a comparison of only 69 per cent of last season.

GALLATIN RIVER:

According to recent snow survey measurements, the February first snow-pack appears to be about 20 per cent below average. This year's pack is 78 per cent of last year, 52 per cent of 1956, and only 81 per cent average. The March first Surveys will give a better estimate of the potential streamflow for irrigation. At the present time prospects are not very bright.

MISSOURI RIVER MAIN STEM:

The February first snow-pack on tributary streams from Toston to Fort Benton indicates a similar water content to last year and only 87 per cent average. With good storms during February and March, stream-flow should be close to average.



MISSOURI BASIN - continued

UPPER YELLOWSTONE RIVER:

Snow measurements made by the Yellowstone National Park Service through the Park area indicate quite a deficiency on February first in comparison with previous years. This season's pack is now 80 per cent of last year, 51 per cent of 1956 and only 78 per cent average.

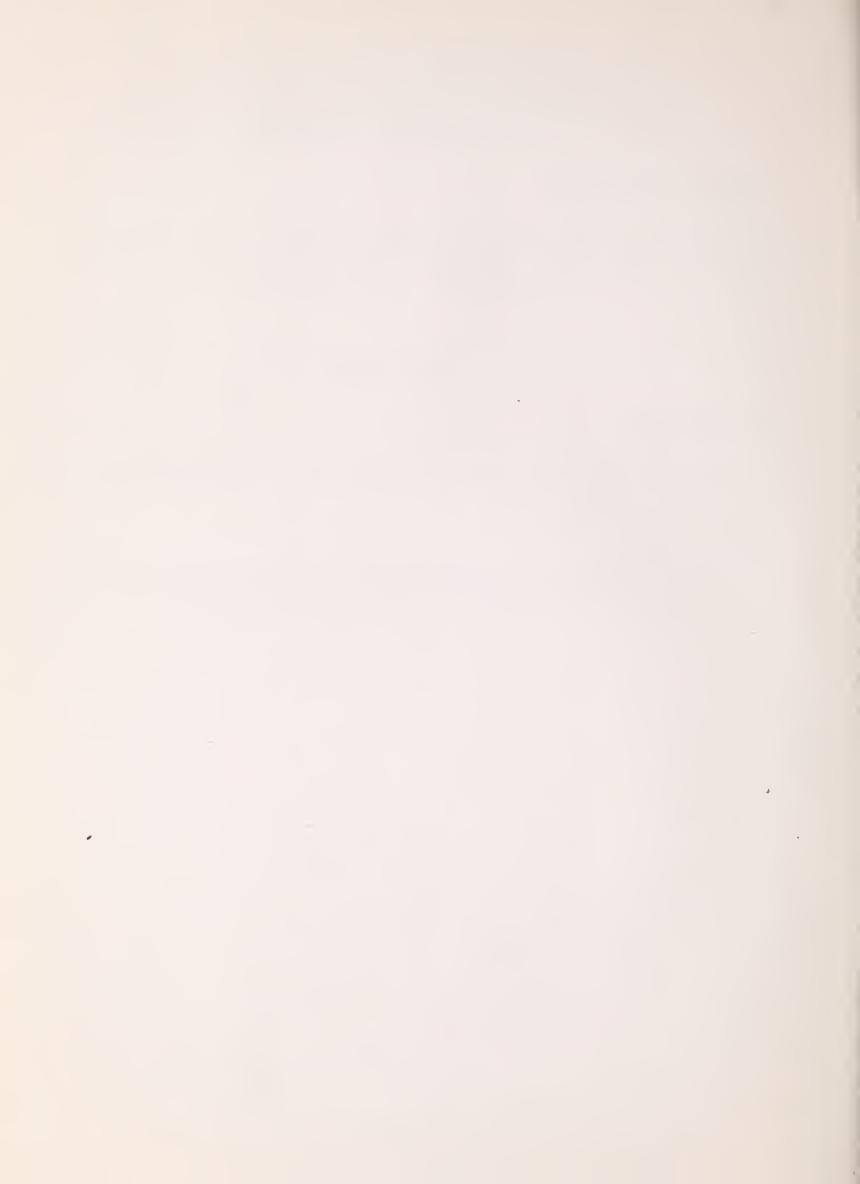
COLUMBIA BASIN

FLATHEAD RIVER:

The 1958 snow-pack on the Flathead River basin is slightly heavier than last year by 7 per cent and is 81 per cent of 1956. This year's pack is 86 per cent average.

CLARK FORK RIVER:

A comparison of the 1958 snow-pack with other years shows that there is 113 per cent of last season, 74 per cent of the 1957 pack and 102 per cent average.



COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

Summary of snow survey data by tributary Watersheds February 1, 1958

TRIBUTARY BASINS	No. of Courses Averaged	No. Years Used	lent e	expresse	cer equiva- ed as % of AVERAGE	
MIS	SOURI RIVER F	BASIN IN	MONTAN	; J <u>A</u>		Ŧ
JEFFERSON RIVER	1	11-15	87%	74%	91%	
MADISON RIVER	7	8-15	69%	49%	75%	
GALLATIN RIVER	2	10-15	78%	52%	81%	
MISSOURI MAIN STEM						and the supplemental substitution of the subst
(Toston-Ft. Benton)	6	13-15	101%	62%	87%	Annual Property of the Party of
Marias River	1	15	89%	82%	96%	margarette stade della factoria
Total Missouri	15	8-15	76%	57%	78%	The transfer of the second
UPPER YELLOWSTONE (MONTANA)	6	15-15	80%	51%	78%	-
COL	UMBIA RIVER E	BASIN IN	MONTAN	J <u>A</u>		And the second s
KOOTENAI RIVER ABOVE LIBBY, MONTANA	7	6-15	87%	74%	90%	on approximation of the second
FLATHEAD RIVER	7	5-11	107%	81%	86%	
CLARK FORK	14	5-15	113%	74%	102%	
BITTERROOT RIVER	2	11-15	96%	67%	96%	





INDEX TO MONTANA & NORTHERN WYOMING SNOW COURSES

						77.4		10 1	101111			Locati	on					Davida	Montana		Locati Sec.	on	Range	Record	Measuring	Measured
Drainage Basin and Course Name	Montana Number	£lev.	Sec.		Range Long.	Record Began	Measuring Dates	Measured By	Drainage Basin and Course Name	Montana Number	Elev.	Sec.	Twp.	Runge Long.	Record Began	Measuring Datee	Measured By	Drainage Basin and Course Name	Number	Elev.	Lat.	Twp.	Long.	Began	Dates	Ву
JETFELSW RIVER			OURI RIV							!	MISSOURI	RIVER DR	AINAGE	(cont.)				(TONGUE RIVE	(cont.)	MISSOURI	HIVER D	MINKOS	(cono.)			
1927458-200 <u>8</u>)	HEAD)								(UPPER YELLOWS	STONE)			90	18E	1937	l,	1	Horse Trail Div.	7E19	9200	29	55N	90W	1956	2,3,4,5	1
Lakeview Ridge Lakeview Canyon	1153 1154	7400 6930	27 26	148 148	2W 2W	1948 1948	3,4,5 3,4,5	10 10	Camp Senia Canyon	9D1 10E3	7890 7750	141. 25	8S 9S	17030.		1,2,3,4,5	6	Lake Geneva North Tongue	7E16 7E15	9000 8800	7 17	52N 55N 55N	86W 89W 88W	1956 1956 1956	2,3,4,5 2,3,4,5 2,3,4,5	1
Mimekiln white Pine Ridge	1252 1251	6950 8850	18	158 148	9W 9W	1948 1948	3,4 3,4	1	Crevice Mt.	10D7 10D5 10D6	7400 8400 8000	22	9S 7S	9E 12E	1935 1941	بار3 بار3	2	Sibley Lake Sucker Creek	7E11 7E12 7E10	8000 9000 7500	10 19 32	55N 56N	87W 87W	1956 1956	2,3,4,5	î
(HORDE PRIIRI	(<u>s</u>)								Independence Lake Camp Lupine Creek	10E4 10E1	7 850 7300	144°-34°	6/11	110°-24' 110°-37'	1938	1,2,3,4,5	6	Steamboat Point Wood Rock O.S.	7E13	8500	3	SUN	W88	1956	2,3,4,5	1
Sloody Dick Gold Stone	13D10 13D9	7600 8100	12	8S 8S	16W	1948 1948	3,4 3,4	1	Lodgepole	9E1	8200	32	56N	T00M	1940	2,3,4,5	-)4	(POWDER RIVER		0.000	,	1.201	8LN	1956	2,3,4,5	,
Lemhi Pass Terrell Jreek Trail Jreek	13E1 13D12 13E2	7480 6650 7090	9 14 15	10S 9S 10S	15W 15W 15W	1948 1948 1948	3,4 3,4 3,4	1	(SRIELDS RIVER	1003	6500	10	ЦN	10E	1938	3,4	1	Crazy Woman Huddy Creek G.S.	6E2 6E1 7 E8	8200 7800 9700	л 5	47N 48N 48N	814N 85W	1956 1950	2,3,4,5	1
Selvay Junction	13011	6800	27	85	15W	1948	3,4	î	LOWER YELLOWSTONE									Munkers Pase North Powder #2 Onion Gulch	7E36 7E27	8300 8100	20	47N 48N	85W 85W	1956 1956	2,3,4,5	1
(<u>BIG HOLL</u>)	2 2:12	71. 22	20	3.5	3 0	201.0	2 (,	(WIND RIVER) V	iyoming								Soldier Park Sour Dough	7E5 7E6	8700 8500	36 17	51N 49N	85M 82M	1950 1936	2,3,4,5 2,3,4,5	1
Big Hole Pass Fig Hole Pass-Be. East Boundary	13D3 13D4 13D5	7400 6900 6700	28 24 22	3S 3S	16W 18W 17W	1948 1948 1948	3,4 3,4 3,4	i	Big Warm Brooks Lake #3	9F12 10F8	8800 9200	36 23	Ц2N ЦЦN	109W 110W	1955 1939	2,3,4,5	1			COL	UNBIA RI	VER BASI	IN			
Gibbons Pass Jahnke Creek	13D2 13D8	7100 7340	4 25	2S 7S	19W 16W	1934 1948	1,2,3,4,5	1,3	Burroughs Creek Dinwoodie	9F4 9F10	8800 10000	15 21 34	143N 39N 14N	107W 105W 6W	1948 1948 1948	2,3,4,5 2,3,4,5 2,3,4,5	1	KOOTENAI RIVER								
Miner Forks Miner Lake	1306 1307	7300 6720	24 10	6S 6S	17W 16W	1948 1945	3,4 3,4,5	1	Dry Creek DuNoir East Fork	9F9 9F6 9F13	9500 8750 9200	27 23	L2N LLN	108W	1940 1956	2,3,4,5	1	Baree Mountain Blue Bird Basin	1581 14A1	6000 6800	24	25N 37N	31W 26W	1937 1937	4,5,5	1,2
(<u>we se rever</u>)									Geyser Creek Little Warm	9F7 9F8	8500 9500	12 24	行が	108W 108W	1948 1948	2,3,4,5	1	Red Mountain Weasel Divide	15A1 14A7	6000 5450	8	36N 37N	211 M	1937 1955	3,4,5,5 4,5,5	1,2
Anderson Mdw.	13014	7000 8450	18 15	3S US	12W 12W	1948 1934	3,4,5	1 3	Sheridan R.S. #1 Sheridan R.S. #2	9F5 9F14	7500 7500	3	42N 42N 43N	109W 109W 107W	1939 1955 1940	2,3,4,5 2,3,4,5 2,3,4,5	1	FLATHEAD RIVER								
«Tise River (RUBY RIVER)	13013	6300	15	2\$	12W	1948	3,4	1	T-Cross Ranch Togwotee Pass	9F3 10F9	8000 9600	29	TH'N	1104	1936	2,3,4,5	ıî	Basin Creek Big Creek	13B14 13B3	5000 6750	11 647	19N 22N	18W	1951 1941	2,3,4,5 3,4,5	2 5
Cottonwood	11E2	5900	24	108	3W	1948	بارد	1	(POPO AGIE RIV						2020	0.01.0	,	Brush Creek Cattle Queen	11,Al, 13A1	5000 4700	13 7	30N 35N 31N	26W 17W 19W	193 7 1939 1937	3,4,5 3,4,5	1,2 6 1,2
Cottonwood (Upper) Flashlight Tobacco Root) 11E1 12D3 12D2	8400 6950 6900	30 22 13	10S 8S 4S	2พ 7พ แพ	1948 1945 1948	3,4,5	1	Blue Ridge Bruce's Camp	802 865 903	9500 6500 10000	23 24 22	31N 32N 2S	101W 101W 3W	1939 1955 1948	2,3,4,5 2,3,4 2,3,4,5	1	Desert Mountain Mell Roaring Div. Molbrook	13A2 14A3 13B13	5600 5770 4530	24 35 18	32N 21N	22W 13W	1942	1,2,3,4,5 3,4,5 1,2,3,4,5	1,2
Figilante	1101	6125	28	98	3W	1948	3,4	i	Mobb's Park Mosquito Park R.S. Sawmill Clade	1	9500 8500	23	2S 31N	3W 101W	1940 1939	2,3,4,5	i i	Kiehenehn Logan Creek	14A6 14A5	4000 4300	14 34	37N 30N	27M 57M	1954 1937	4,5 3,4,5	6 2
MADISON RIVER	2207	1000		220	•				South Pass St. Lawrence	803 9F11	9000	13 26	30N 1N	101W	1939 1940	2,3,4,5	1	Marias Pass Quintonkon	13A5 13A13	5250 3800	34 11	30N 26N	14W 17W	1934 1951	1,2,3,4,5 2,3,4,5	3 1,2
Hest Tellowstone Norris Basin	1125 1127 1022	6550 6700 7500	22 34 24°−42°	11S 13S	3E 5E 110°-42'	1934 1934 1935	1,2,3,4,5 1,2,3,4,5 3,4	3 6	Trout Creek (OWL CREEK) Wy	9C2 oming	8400	5	28	2₩	1948	2,3,4,5	1	Spotted Bear Mt. Strawberry Lake Trinkus Lake	13B2 13A10 13B1	7000 6500 6500	23 11	25N 28N 25N	15W 19W 17W	1948 1948 1948	3,4,5 3,4,5 3,4,5	1,2
GALLATIN RIVER		1,500				-///	2,4		Beavers Mill Owl Creek	9F2 8F1	8900 8700	6 36	43N 43N	102W 101W	1948 1948	2,3,4,5	1	Trout Lake Twin Creeks	13A12 13B11	3600 3580	21 14	28N 26N	17W 16W	1948 1951	3,4,5	1,2
Devil'e Slide Bood Meadow	10D4 10D3	ξ100 6600	14 22	5S 4S	6E 6E	1935 1934	2,3,4,5	2,1	(GREYBULL RIVE	R) Wyoming	:							Upper Holland Lk.	1385	7000	28	20N	16W	1948	3,4,5	2
Mystic Lake New World	10D2 10D1	6600 6700	30 24	3S 3S	73 6E	1934 1935 1939	2,3,4,5 2,3,4 1,2,3,4,5	2,1 7 7	Timber Creek #1 Timber Creek #2	9E2 9E3	8800	25 - 25	47N 47N	103W	1948 1955	2,3,4,5	1	CLARK FORK Baree Mountain	15B1	6000	1	25N	31W	1937	4,5,5	
21-Yile	11E6	7150	1	113	5E	1934	1,2,3,4,5	3	Wood River #1 Wood River #2	9F1 9F15	8000 8000	28 28	46N 46N	103W 103W	1939 1956	2,3,4,5	1	Coyote Hill El Dorado Mine	13B10 13C9	4200 7800	12 23	18N 8N	16W 12W	1952	1,2,3,4,5	2
MISSOURI RIVER MAI Chessman Reservoir		6200	2	811	5W	1936	1,2,3,4,5	3	(SHOSMONE RIVE	R) Wyoming								Preezeout Summit Gold Creek Lk.	15B10 13C10	6800 7200	21 14	15N 8N	27W 12W	1951 1946	4,5	2
Crystal Lake Grasshopper	901 1002	6100 7000	19 19	12N 9N	18E 8£	1938 1938	3,4 3,4	í,2 2	East Entrance Sylvan Pass	10E6 10E5	7000 7100	17 12	52N 52N	109W 110W	1948 1936	1,2,3,4,5	6	Hoodoo Summit Intergaard Lubrecht Forest #	1501 1304 6 1308	6200 6450 5400	9 १ १	14N 5N 14N	27W 13W 15W	1937 1939 1951	4,5 2,3,4 1,2,3,4,5	ار ار
Mings Hill Picmic Grounds Pipestone Pass	1001 1206 12D1	7950 6500 7200	35 10	13N 5N 1N	7E 6W	1937	3,4,5 2,3,4	3 4	(NOWOOD CREEK)	Wyoming						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		North Fork Jocko Picnic Grounds	13B7 12C6	6330 6500	3	1.7N 5N	17W 6W	1941	3,4,5 2,3,4	5
Stemple Pass Ten Mile Oreek L	1201	6900 6250	11 16 13	13H 8N	7W 7W 6W	1938 1934 1935	2,3,4,5 3,4,5 1,2,3,4,5	3	Cold Springs Camp Medicine Lodge Lks	7E25 7E2L	8700 9500	1 7	SON SIN	88W 87H	1956 1956	2,3,4,5	1	Pipestone Pass Slide Rock Mt.	12D1 13C2	7200 7100	11 26	IN	7W 16W	1938 1937	2,3,4,5 4	1
Ten Mile Greek M Ten Mile Greek U	1203 1204	6800 8000	13 19	8n 8n	6w 5w	1934 1935	1,2,3,4,5	3	Munkers Pass North Powder	7E8 7E36	9700 8300	11 20	48N 47N	85W 85W	1950 1956	2,3,4,5 2,3,4,5 2,3,4,5	1	Southern Cross Stemple Pase Storm Lake	1305 1201 1307	6500 6900 7 780	8 16 19	5N 1 3N Lin	13W 7W 13W	1939 1934 1939	2,3,4 3,4,5	l4 3
(TETON RIVER)									Onion Gulch Tensleep Lake	7E27 7E26	8100 90 7 5	31 33	48N 50N	85W 86W	1956 1956	2,3,4,5	1	Stuart Mill Stuart Mountain	1306 1301	6500 7400	19	5N 14N	13W 18W	1939 1939 1936	2,3,4 2,3,4 h	4 1,2
Preight Greek Waldron Greek	12Al 12B2	6000 5600	13 16	26N 25N	10W 9W	1948 1948	3,4 3,4	1	Tensleep R.S. Tyrell R.S.	7E7 7E35	8300 8300	30 30	49N 49N	86W 86W	1935 1956	2,3,4,5	1	TV Mountain	14B1	6800	33	15N	19W	1956	1,2,3,4,5	ı
ést Fork (SUN RIVER)	1281	6000	6	25N	9W	1948	3,4	1	(SHELL CREEK)									East Fork R.S.	1301	5400	16	231	5.000.0	2027		
Benchmark	1288	5500	9	20N	10W	1948	بار3	1	Bald Mountain Beaver-Tongue Div. Bone-Spring Div.	7E21 7E20 7E18	9600 9200 9200	33 12	56N 55N	91W 91W	1956 1956	2,3,4,5	1	Gibbons Pass Lolo Pass	1302 1405	7100 5230	16	2N 2S 38N	17W 19W 15E	1937 1934 1956	1,2,3,4,5 3,4,5,5	3,1
Sabin Greek 5-Bull	1236 1289	5400 5600	33 36	23N 20N	10W 10W	1949 1948	3,4 3,4 3,4 3,4	1,2 1,2	Granite Creek Camp Granite Pass	7E22 7E17	7800 8950	32 15 19	SSN S3N SUN	89W 89W 88W	1956 1956 1956	2,3,4,5 2,3,4,5 2,3,4,5	1	Mud Creek Pasture Nez Perce Camp	1402	4500 5580	2h 19&20	11N 1S	24W 23W	1937 1937	3,4,5	i 1
Gates Park Goat Mountain Wrong Ridge	1285 1287 1283	5300 7000 6800	31 20	24N 22N	10% 10%	1949	3,4 3,4	1,2 3	Morse-Trail Div. Ranger Creek	7E19 7EL	9200 8800	29 32	55N 53N	90W 88W	1956 1935	2,3,4,5	1	Powell R.S. Skalkaho Summit	1406 1303	4230 7259	33 30	37N 6N	14E 17W	1956 193 7	3,4,5,5	2
erong Greek	1284	5700	17 32	25N 25N	10%	1949 1949	3,4 3,4	1,2 1,2	Shell Creek (PORCUPINE CRE	7E23	9600	12	52N	88W	1956	2,3,4,5	ī			SASKATO	CHEWAN R	IVER BAS	SIN			
(MARIAS RIVER)									Five Spgs. Falls	7E31	7500	19	56N	92W	1956-	231.6	,	ST. MARY RIVER								
Marias Pass MILK RIVER)	1345	5250	34	30N	144	1936	1,2,3,4,5	3	Medicine Wheel	7E30	9000	24	56N	92W	1956	2,3,4,5 2,3,4,5	1	Josephine Upper Josephine Lower # Mount Allen #7	13A15 9 13A14 13A7	4900	48°-50'	1	13.41.	1956 1956	5 5	3,9
Rocky Boy	9A1	5200	15	281	16E	1941	3,4	7	(TONGUE RIVER) Beaver Tongue Div.		9200	12	CCN	021	3000	0.2.1.4		Piegan Pass #4 Piegan #6	13A7 13A4 13A6	5000	48°-46' 48°-46'	1	.13°-4:0° .13°-4:0° .13°-4:2°	1922 1922 1922	5	3,9 3,9
(MARTETERETT FO	ITER)								Big Goose #1 Big Goose #2	7E2 7E32	7700 7 7 00	77 77	55N 53N 53N	91W 86W 86W	1956 1935 1955	2,3,4,5 2,3,4,5 2,3,4,5	1 1 1	Ptarmigan #8	13A9		48*-50			1922	5	3,9 3,9
Grasshopper	1002	7000	19	98	8£	1938	3,4	2	Bone-Spring Div. Burgess R.S. #1 Burgess R.S. #2	7E18 7E1	9200 7 900	32 36	55N 56N	89W 89W	1956 1950	2,3,4,5	i 1	a. Numerals 1 2	3. Is and E	wo fem 1	Van	3				
									Dome Lake #1 Dome Lake #2	7E33 7E3 7E34	7900 8800 8800	36 11 11	56N 53N 53N	89W 87W 87W	1955 1950	2,3,4,5 2,3,4,5	1 1	a. Numerals 1,2,b. Numerals refe								y 1.
									Gloom Creek Granite Pass	7E11 7E17	9300 8 95 0	32 19	55N 54N	87W 88W	1950 1956 1956	2,3,4,5 2,3,4,5 2,3,4,5	1 1 1	1. Soil Conserva	tion Servi			7. Mo	ntana Exp	periment		
																	-	2. U. S. Forest 3. U. S. Geologi 4. Montann Power	Cal Survey			8. Ci 9. Do	ty of Bo	zeman ater & Po	wer Bureau	
																		5. U. S. Indian 6. National Park	Service			11. U.	S. Bure	nu of Rec	life Service lamation try School	
																									4 57M_10	0.3(3)

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MONTANA SHOW SURVEYS - FEBRUARY 1, 1958

SNOW COVER MEASUREMENTS											
MISSOURI BASIN				1958	DIAOM O	1	st Rec		Total		
DRAINAGE BASIN			Date	Snow	Water		Conten	t (In.)	Years		
AND	3.7		of	-	Content	1)	1 2 2 7 6	15-Year	of		
SNOW COURSE	No.	Elev.	Survey	(in.)	(In.)	1957	1956	Average 1938-52	Record		
JEFFERSON RIVER (Rock Beaverhead) #Camp Creek #Kilgore (Big Hole)	12E3 11E12	6800 6200	2/3 1/31	25 27	5.9 5.0	7.9 7.2	3.9 7.0	6.4	21 21		
Gibbons Pass #Moose Creek	13D2 13D16	7100 6200	1/30 1/31	60 47	14.4	14.8	22.7	15.2* 10.9**	18 11		
MADISON RIVER							The continue and distance				
Hebgen Norris Basin 21-Mile W. Yellowstone #Big Springs #Island Park #Valley View	11E5 10E2 11E6 11E7 11E9 11E10 11E8	6550 7500 7150 6700 6500 3600 6500	1/28 1/30 1/29 1/28 1/29 1/30 1/29	30 29 37 23 42 42 31	5.9 5.3 8.6 4.2 10.8 9.7 6.5	10.0 6.6 13.5 9.1 14.5 10.4 10.5	10.6 9.9 19.3 12.7 20.5 17.8 13.9	7.6 7.7** 11.4 8.0 12.8 10.1 10.0**	23 8 20 20 20 22 22 12		
GALLATIN RIVER											
Devil's Slide Hood Meadow Mystic Lake New World	10D4 10D3 10D2 10D1	8100 6600 6600 6700	2/2 2/1 1/31 1/31	46 30 20 27	12.6 7.3 E. 5.0 6.2	5.4	15.0 6.4 9.1 19.3	6.8**	10 20		
21-Mile	11E6	7150	1/29	37	8.6	13.5	エグ・ン	11.4	20		
MISSOURI RIVER MAIN	STEM						1				
Chessman Res. Picnic Grounds Pipestone Pass Tenmile, Lower Tenmile, Middle Tenmile, Upper (Marias River)	1205 1306 12D1 1202 1203 1204	6200 6500 7200 6250 6800 8000	1/31 1/31 2/3 2.2 2/1 2/1	11 13 16 19 29 33	2.3 2.4 3.2 3.9 6.4 8.2	1.2 3.8 3.2 4.4 5.8 7.7	4.0 5.5 5.8 6.1 9.6 11.9	3.3 3.5** 2.9* 4.8 7.0 8.8	22 13 18 22 23 23		
Marias River) Marias Pass	13 A 5	5250	1/31	40	10.8	12.2	13.3	11.3	23		

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

^{**} Average for period of record.

[#] Adjacent Basin
E Estimated



MONTANA SNOW SURVEYS - FEBRUARY 1, 1958

MISSOURI BASIN DRAINAGE BASIN AND			Date of	1958 Snow Depth	Water	Pa	EASUREM ast Reco Content	ord	Total Years of
SNOW COURSE	No.	Elev.	Survey			1957	1956	Average 1938-52	Record
UPPER YELLOWSTONE									
Canyon Cooke City Lake Camp (Old) Lake Camp (New)	10E3 10D7 10E4	7750 7400 7850 7850	1/31 1/30 1/31 1/31	38 25 29 26	7.7 4.6 4.5 4.3	10.0 5.8 6.0	15.0 8.9 15.0	9.9** 6.3** 6.8**	ıi
Lodgepole, Wyo. Lupine #Astor Creek #West Thumb	9E1 10E1 10E8 10E7	8200 7300 7700 7900	1/31 1/28 1/28	24 53 42	4.4 16.4 11.7	7.5 8.2 19.0 12.8	12.6 13.0 36.8 8.2	7.2* 15.6 17.1**	2 15 38 11

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

** Average for period of record.

Adjacent Basin



COLUMNIA DACEN				1958	SNOW CO	1	EASUREM		M - 4 - 7
COLUMBIA BASIN DRAINAGE BASIN			Date	Snow	Water		Conten	t (In.)	Total
AND			of		Content	Wa 001	COHOCH	15-Year	of
SNOW COURSE .	No.	Elev.				1957	1956	Average 1938-52	Record
KOOTENAI RIVER (a	bove Lib Montana								
Fernie Gray Creek Marble Canyon Nelson Creek New Fernie Sinclair Pass Sullivan Mine	Can Can Can Can Can Can	3500 5100 5000 3050 4100 4500 5100	1/31 1/27 1/31 1/31 1/31 1/31 1/30	27 35 40 48 41 17 36	6.8 9.3 9.5 13.1 10.7 3.3 8.9	7.3 13.3 13.7 10.5 10.9 5.9 8.3	7.1 12.9 12.7 16.5 12.9 5.9 15.1	6.6% 13.0% 11.9% 10.1% 11.6% 4.8% 10.1%	18 9 10 19 7 10 12
FLATHEAD RIVER							Angle - Variantes - ratio data		and the continued and
Basin Creek Brush Creek Coyote Hill Desert Mountain Holbrook Marias Pass Spotted Bear Mt. Trout Lake Twin Creeks	13B14 14A4 13B10 13A2 13B13 13A5 13B2 13A12 13B11	5000 5000 4200 5600 4530 5250 7000 3600 3580	2/2 1/31 1/27 2/2 1/31 1/29 1/28 1/28	29 33 33 31 40 33 35 31	5.9 8.2 8.4 10.8 7.7 9.1 7.1	3.4 7.4 7.4 9.1 4.9 12.2 9.1 8.0 7.3	8.3 15.6 8.9 11.8 8.7 13.3 10.2 10.5 7.8	7.3** 13.0** 7.2** 10.3** 7.6** 11.8 11.5** 8.9**	7 11 11 7 23 2 5 7
CLARK FORK				-			The state of the s		
Coyote Hill Chessman Res. Fish Lake, Ida. Intergaard Lubrecht For. #6 Picnic Grounds Pipestone Pass Southern Cross Storm Lake #2 Stuart Mill Tenmile, Lower Tenmile, Middle Tenmile, Upper TV Mountain #Lookout	13B10 12C5 21B4 13C4 13C8 12C6 12D1 13C5 13C7 13C6 12C2 12C3 12C4 14B1 15B2	4200 6200 5000 6450 5400 6500 7200 6500 6500 6800 6800 6800 5250	1/31 1/31 2/1 1/31 2/3 1/31 2/3 1/31 2/2 2/1 2/1 1/30 1/30	33 11 90 25 16 13 16 20 29 20 19 29 33 41 90	8.2 2.3 27.0 5.6 3.0 2.4 3.3 7.3 4.3 7.3 6.4 26.6	7.4 1.2 23.5 3.8 3.8 3.0 7.6 4.4 5.7 11.2 19.7	8.9 4.0 28.8 7.4 3.7 5.8 5.8 12.4 6.1 9.6 11.9	7.2** 3.3 26.1** 5.1** 3.4** 3.5** 2.9* 4.1** 4.4** 4.8 7.0 8.8 22.4	11 22 6 13 6 13 18 13 5 13 22 23 23 21
BITTERROOT Gibbons Pass	13D2	7100	1/30	60	14.4	14.8	22.7	15,2*	18
#Moose Creek	13D16	6200	1/31	47	10.7		15.0	10.9%	7

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

** Average for period of record.

Adjacent Basin



STATUS OF RESERVOIR STORAGE MISSOURI RIVER IN MONTANA February 1, 1958

BASIN &		USABLE CAPACITY	USAE	BLE STORAC	GE - 1000 A	ACRE FEET 1938-52						
STREAM	RESERVOIR	1000 A.F.	1958	1957	1956	AVG.	YRS.					
MISSOURI RIVER BA	SIN											
Beaverhead Madison River Madison River Hyalite Creek Missouri River Missouri River	Lima Hebgen Lake Ennis Lake Middle Creek Canyon Ferry Hauser Lake	84.0 345.0 41.0 8.0 2043.0	26.4 157.4 38.7 3.5 1651.0	6.1 158.1 38.4 3.1 1488.0	20.0 185.1 32.5 3.4 1526.0	64.5* 234.7 34.1 3.6** 1272.0**	16 22 22 6 5					
Missouri River Missouri River N. Fk. Sun River N. Fk. Sun River N. Fk. Sun River Tiber Birch Creek Dupuyer & Birch Judith River Missouri River Milk River Milk River W. Rosebud Cr. Tongue River Swiftcurrent Cr.	& Lake Helena Lake Helena Holter Lake Gibson Willow Creek Pishkun Marias Swift Lake Francis Ackley Lake Ft. Peck 3/ Fresno Nelson Mystic Lake Tongue River Sherburne Lake	10.4 81.9 105.0 32.3 32.0 1316.0 30.0 112.0 5.8 19410.0 127.2 66.8 20.8 73.9	63.1 10.6 68.5 28.0 19.1 12.7 622.1	62.5 10.4 78.8 39.6 23.4 16.5 651.6 23.7 90.0 6014.0 75.0 51.4 6.0 10.8 18.2	65.6 11.6 14.2 70.7 26.7 16.6 60.5 22.7 92.4 4.2 5346.0 66.0 39.9 6.2 27.0 20.7	14.2* 7.7** 53.3 59.6 12.9 15.6 19.5 72.8 4.2* 10695.0* 56.2 28.5 8.0 10.0* 19.0	18 10 22 22 22 22 22 22 18 17 18 22 27 22					
MISSOURI RIVER BA	SIN - WYOMING			3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		Manager States						
Shoshone River Wind River Wind River Bull Creek Belle Fourche	Buffalo Bill Boysen Pilot Butte Bull Lake Key Hole	440.0 408.6 31.6 152.0 190.0	189.4 322.4 14.4 75.1 1.2	128.2 220.0 14.3 67.8 14.1	122.1 13.1 14.6 62.3 20.9	264.5 262.2** 14.5 56.7* 12.1**	23 6 22 19 5					
MISSOURI RIVER BA	SIN - NORTH DAK	OTA		The state of the s								
Heart River Heart River Missouri River	Heart Butte Dickerson Garrison Lake	54.8 4.3 13805.0	56.6 4.3 4500.0	43.7 3.2 535.2	45.0 2.6 853.0	53.1** 3.7**	7 7 3					
MISSOURI RIVER BA	SIN - SOUTH DAK	OTA										
Belle Fourche Cheyenne River Cheyenne River Grand River Missouri River	Belle Fourche Angostura Deerfield Shadehill Ft. Randall	185.0 160.0 15.1 84.0 2401.6	56.8 10.9 79.4 1110.0	37.0 27.8 8.2 133.4 1090.7	78.2 74.9 10.5 128.1 1453.8	 134.4※	22453					

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

^{**} Average for period of record.

3/ Gross contents including 617,000 A. F. dead storage.



STATUS OF RESERVOIR STORAGE COLUMBIA RIVER IN MONTANA February 1, 1958

BASIN		USABLE	USA	BLE STORAG	E - 1000 A		
E STREAM	RESERVOIR	CAPACITY 1000 A.F.	1958	1957	1956	1938-52 AVG.	YRS.
COLUMBIA RIVER BA	SIN						
Flint Creek S. Fk. Flathead Flathead River Flathead River 6/ Flathead River 7/	•	31.0 3500.0 1791.0 42.8 98.6	21.5 2061.0 1032.0 25.4 18.1	19.2 1802.0 849.8 29.9 28.5	21.7 2595.0 858.2 34.3 27.2	21.9* 1544.7** 721.7 21.1* 36.8*	17 6 50 17 17

- * Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.
- ** Average for period of record.
- 6/ Camas Reservoirs are shown as a sum of (4) small reservoirs on the west side of Flathead Lake located on Dry Creek and Little Bitterroot River.
- 7/ Mission Valley Reservoirs are shown as a sum of (8) small reservoirs located south and east of Flathead Lake. Both Camas and Mission Valley reservoirs are operated by the Indian Irrigation Service.



MONTANA SNOW SURVEYS FEBRUARY 1, 1958

	SNOW COVER MEASUREMENTS										
MISSOURI BASIN		_	Date	1958 Snow	Water	Ti .	st Reco		Total Years		
DRAINAGE BASIN AND			of		Content		OOHOGH	15-Year	of		
SNOW COURSE	No.	Elev.	Survey			1957	1956	Average 1938-52	Record		
						100		1770-72			
LOWER YELLOWSTONE	(Wind Ri	ver)									
Big Warm	9F12	8800	1/28	21	3.7	5.3	10.6	76 1.4	3		
Brooks Lake Burroughs Creek	10F8 9F4	9200 8800	1/27 1/29	43 28	11.6	12.6	23.6	16.4* 16.6**	17		
Dinwoodie	9F10	10000	, ,			6.7	11.8	8.9**	9		
Dry Creek DuNoir	9F9 9F6	9500 8750	1/27	16	2.7	3.5	7.6	4.8** 6.3*	9 16		
Geyser Creek	9F7	8500	1/28	12	2.3	4.2	8.9	5.8***	9		
Little Warm Sheridan R.S. #2	9F8 9F14	9500 7500	1/28 1/27	34 18	7.5 2.9	9.3	17.9	12.5**	9		
T-Cross Ranch	9F3	8000 9600	1/29 1/30	13 64	3.5 15.1	5.2 16.9	8.3	5.0* 19.2	17 22		
Togwotee Pass	10F9	9000	1/30	OTi'	17.1	10.7	27.4	±7 • ∠			
LOWER YELLOWSTONE	(Popo Ag River)	ie									
Blue Ridge	8G2	9500	2/2	26	5.5	6.0	15.6	8.2**	16		
Bruce's Camp Hobbs Park	8G5 9G3	6500 10000	2/5 2/4	8 31	1.6 7.0	0.6	0.8	12.9%	2 9		
Mosquito Park R.S.	9GL	9500	2/4	17	3.3	4.2	8.9	5.6*	14		
Sawmill Glade South Pass	8G1 8G3	8500 9000	2/2 2/2	22 30	4.8 7.1	4.1	8.0 17.0	5.3* 9.8**	15		
St. Lawrence R.S.	9F11	9000	1/31	12	2.0	3.6	8.9	4.7	14		
Trout Creek	9G2	8400	2/4	1/4	3.2	3.0	4.0	3.5*	9		
LOWER YELLOWSTONE	(Owl Cre	ek)									
Beavers Mill Owl Creek	9F2 8F1	8900 8700			2.2 2.4	3.2 2.2		5.3* 3.9*	9 9		
LOWER YELLOWSTONE	(Greybul	l River))								
Timber Creek #2		8800			2.1	2.0	1.5	1.9%	2		
Wood River #2	9F15	8000	1/29	16	3.3	2.6	3.0	7-	3		

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. ** Average for period of record.



MONTANA SNOW SURVEYS FEBRUARY 1, 1958

ALTEGORIET DAGTAL		SNOW COVER MEASUREMENTS 1958 Past Record Total										
MISSOURI BASIN DRAINAGE BASIN			Date	Snow	Water	Water		t (In.)	Years			
AND SNOW COURSE	No.	Elev.	of Survey		Content (In.)	1957	1956	15-Year Average 1938-52	of Record			
LOWER YELLOWSTONE (S	hoshone	River)										
Carter Mt. East Entrance Sylvan Pass	10 E 6	7000 7100	1/31 2/1 2/1	17 31 38	3.1 7.3 8.1	4.0 8.9 10.1	12.8 14.7		1 9 14			
LOWER YELLOWSTONE (N	owood (Creek)					t •		•			
Cold Springs Camp Medicine Lodge Lakes Munkers Pass (Muddy) Onion Gulch Tensleep Lake Tensleep R.S.	7E25 7E24 7E8 7E27 7E26 7 E7	8700 9500 9700 8100 9075 8300	2/8 2/8 2/7 2/7 2/8	25 35 28 27 34	4.0 6.6 5.4 5.0 6.7	4.8 7.2 6.0 6.4 6.4 4.9	6.1 9.2 9.0 8.2 9.4 6.6	### 1729 ### 1729 ### 1729 ### 1729 ### 1729 ### 1729 ### 1729 #### 1729	2 2 3 2 2 2			
LOWER YELLOWSTONE (S	hell Cr	eek)				and the state of t						
Bald Mountain Beaver-Tongue Div. Bone-Spring Div. Granite Creek Camp Granite Pass Ranger Creek Shell Creek	7E21 7E20 7E18 7E22 7E17 7E4 7E23	9600 9200 9200 7800 8950 8800 9600	1/28 1/29 1/29 2/7 1/29 2/6 2/3	39 35 34 18 33 29 26	8.4 7.8 7.7 2.8 7.4 4.9 7.5	11.8 11.2 9.9 10.2 6.5 10.0	14.3 14.1 13.6 13.5 7.4 12.2		2 2 2 - 2 2 2 2			
LOWER YELLOWSTONE (F	orcupin	ne Cr.)					n material reprint residents and the control of the					
Five Springs Falls Medicine Wheel	7E31 7E30	7500 9000	2/3 1/28	13 30	2.4	2.6	4.6	. est C3	2 2			
LOWER YELLOWSTONE (T	ongue I	River)				and a man depth of the state of	is the half-property and the 40 Miles					
Beaver-Tongue Div. Big Goose #2 Bone-Spring Div.	7E20 7E32 7E18	9200 7700 9200	1/28 2/1 1/29		7.8 3.6 7.7	11.2 4.4 9.9	14.1 6.6 13.6	603 ENG	2 2 2			

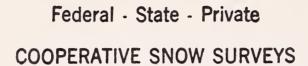
^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.



MONTANA SNCW SURVEYS FEBRUARY 1, 1958

					SNOW CO	OVER ME	ASTIREM	TMTS	
MISSOURI BASIN		-		1958	DIVOW O	1	st Rec		Total
DRAINAGE BASIN		_	Date	Snow	Water	Water	Conten		Years
AND SNOW COURSE	No.	Elev.	of Survey	Depth (In.)	Content (In.)	1957	1956	15-Year Average 1938-52	of Record
LOWER YELLOWSTONE	(Tongue								
	cont'd	1)							
Burgess R.S. #2 Dome Lake #2 Gloom Creek Granite Pass North Tongue Sibley Lake Sucker Creek Steamboat Point Wood Rock G. S.	7E33 7E34 7E14 7E17 7E15 7E11 7E12 7E10 7E13	7900 8800 9300 8950 8800 8000 9000 7500 8500	1/28 2/1 1/30 1/29 Drift 1/31 1/30 1/31 1/29	18 27 31 33 ing 28 28 17 23	3.4 4.8 6.4 7.4 5.3 4.9	4.1 6.0 6.9 10.2 4.4 5.4 6.3 3.4	5.9 8.9 13.6 7.6 7.0 8.5 8.6 8.6		2 2 2 2 2 2 2 2 2 2 2
LOWER YELLOWSTONE	(Powder	River)							
Muddy Creek G.S. Munkers Pass(Muddy) Onion Gulch Soldier Park Sour Dough	7E28 7E8 7E27 7E5 7E6	7800 9700 8100 8700 8500	2/5 2/7 2/7 2/4 2/5	11 28 27 16 19	2.3 5.4 5.0 3.0 3.8	2.2 6.0 6.4 1.6 3.8	4.0 9.0 8.2 7.6 7.7	3.0%	2 3 2 6 2

^{*} Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.



Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"